**Study sheds light on brain signalling**

**Research into how the brain transmits messages to other parts of the body could improve understanding of neurological disorders.**

University scientists have identified a protein crucial for maintaining the health and function of the segment of nerve fibres that controls transmission of messages within the brain.

The research could have relevance to help understanding of conditions such as epilepsy, dementia, multiple sclerosis and stroke.

Knowing more about how signals in the brain work will help us better understand neurodegenerative disorders and why, when these illnesses strike, the brain can no longer send signals to parts of the body.

**Professor Peter Brophy**

***Director of the University's Centre for Neuroregeneration***

**Neurodegenerative disorders**

This study could help direct research into neurodegenerative disorders, in which electrical impulses from the brain are disrupted.

This can lead to inability to control movement, causing muscles to waste away.

**Circuitry of the brain**

The brain works like an electrical circuit, sending impulses along nerve fibres in the same way that current is sent through wires.

These fibres can measure up to a metre, but the area covered by the segment of nerve that controls transmission of messages is no bigger than the width of a human hair.

At any moment tens of thousands of electrical impulses are transmitting messages between nerve cells in our brains.

Identifying proteins that are critical for the precise initiation of these impulses will help unravel the complexities of how brains work and may lead to new insights into how brains evolved.

**Dr Matthew Nolan**

***University's Centre for Integrative Physiology***

The research, published in the journal Neuron, was funded by the Wellcome Trust and the Medical Research Council.